pt. 5a.

Std. No. 29677
Hpl No. 16599.

REPORT ON BOILERS.

Received at London Office

Date of writing Report 192 When handed in at Local Office 24.1. 1928 Port of WEST HARTLEPOOL

No. in Book Survey held at Hartlepool Date, First Survey 17th Oct 1927 Last Survey 6th Feb 1928.

on the S.S. "FORTHBRIDGE" (Number of Visits 33) Tons { Gross 5140 / Net 3156

Built at Sunderland By whom built Wm Doxford & Sons Ltd Yard No. 587 When built 1928

Engines made at Sunderland By whom made Richardsons Westgarth & Co Ltd Engine No. When made 1928

Boilers made at Hartlepool By whom made Richardsons Westgarth & Co Ltd Boiler No. 2196 When made 1928

Nominal Horse Power 439. Owners Crosby Maple & Co Port belonging to Hartlepool.

MULTITUBULAR BOILERS—MAIN, ~~AUXILIARY~~, OR ~~DONKEY~~.

Manufacturers of Steel David Colville & Sons Ltd. (Letter for Record (S))

Total Heating Surface of Boilers 6232 sq ft. + 1646 Aux. Is forced draught fitted Yes Coal or Oil fired Coal

Number and Description of Boilers 2 Single ended. 2SB Working Pressure 180 lbs

Tested by hydraulic pressure to 320 lbs Date of test 16-11-27 No. of Certificate 3424 Can each boiler be worked separately Yes.

Total Area of Firegrate in each Boiler 77.5 sq ft No. and Description of safety valves to each boiler Double Spring loaded

Area of each set of valves per boiler { per Rule 19.9 / as fitted 25.13 } Pressure to which they are adjusted 185 lbs Are they fitted with easing gear Yes

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler

Smallest distance between boilers or uptakes and bunkers or woodwork 1'-6" Is oil fuel carried in the double bottom under boilers No

Smallest distance between shell of boiler and tank top plating 2'-0" Is the bottom of the boiler insulated Yes.

Largest internal dia. of boilers 17'-3 1/4" Length 11'-6" **Shell plates:** Material Steel Tensile strength 29/33

Thickness 1 3/8" Are the shell plates welded or flanged No Description of riveting: circ. seams { end Double Rivd Lap / inter. Double Rivd Butt St.

Long. seams Treb. riv. D. Butt St. Diameter of rivet holes in { circ. seams 1 3/8" / long. seams 1 3/8" } Pitch of rivets { 3 5/8" / 9 3/8" }

Percentage of strength of circ. end seams { plate 62.1 / rivets 47.23 } Percentage of strength of circ. intermediate seam { plate / rivets }

Percentage of strength of longitudinal joint { plate 85.33 / rivets 85.39 / combined 87.76 } Working pressure of shell by Rules 182.1 lbs

Thickness of butt straps { outer 1 1/16" / inner 1 3/16" } **No. and Description of Furnaces in each Boiler** 4 Cf A Morison's.

Material Steel Tensile strength 26/30 9/16 Smallest outside diameter 3'-7 3/8"

Length of plain part { top / bottom } Thickness of plates { crown / bottom } Description of longitudinal joint Welded.

Dimensions of stiffening rings on furnace or c.c. bottom Working pressure of furnace by Rules 188 lbs

Tube plates in steam space: Material Steel Tensile strength 26/30 Thickness 1 5/16" Pitch of stays 23 3/4" x 18"

How are stays secured Double nuts Working pressure by Rules 181.5 lbs.

Tube plates: Material { front Steel / back Steel } Tensile strength { 26/30 / 26/30 } Thickness { 7/8" / 13/16" }

Vertical pitch of stay tubes in nests 13 1/2" x 8 3/4" Pitch across wide water spaces 14 1/4" Working pressure { front 188 lbs / back 192 lbs }

Girders to combustion chamber tops: Material Steel Tensile strength 28/32 Depth and thickness of girder

Centre 8 1/2 x 1 5/8" Length as per Rule 2'-7 1/2" Distance apart Centre 9 7/8" Wings 9 1/2 & 9" No. and pitch of stays

Each Three 7 1/2" Working pressure by Rules 187 lbs **Combustion chamber plates:** Material Steel.

Tensile strength 26/30 Thickness: Sides 11/16" Back 23/32" Top Centre 21/32 Wing 5/8" Bottom 11/16"

Pitch of stays to ditto: Sides 9 3/4 x 8 5/8" Back 11 1/8" x 8 1/2" Top 9 1/2 x 7 1/2 Are stays fitted with nuts or riveted over Nuts.

Working pressure by Rules 185 lbs **Front plate at bottom:** Material Steel. Tensile strength 26/30

Thickness 7/8" **Lower back plate:** Material Steel Tensile strength 26/30 Thickness 13/16"

Pitch of stays at wide water space 14 1/2" Are stays fitted with nuts or riveted over Nuts.

Working Pressure 190 lbs **Main stays:** Material Steel Tensile strength 28/32

Diameter { At body of stay, or Over threads } 3 1/4" & 3" No. of threads per inch 6 Area supported by each stay 23 3/4" x 18" & 19" x 19"

Working pressure by Rules 188.1 lbs & 186.4 lbs **Screw stays:** Material Steel Tensile strength 26/30

Diameter { At turned off part, or Over threads } 1 3/4" 1 5/8" No. of threads per inch 9 Area supported by each stay 11 1/8" x 8 1/2" & 9 3/4" x 8 5/8"

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Working pressure by Rules 193 lbs 181 lbs Are the stays drilled at the outer ends No ✓ Margin stays: Diameter { At turned off part. or Over threads 1 7/8" ✓

No. of threads per inch 9 ✓ Area supported by each stay 12 13/16" x 8 1/2" Working pressure by Rules 195.9 lbs

Tubes: Material Iron ✓ External diameter { Plain 3 1/4" ✓ Stay 3 1/4" ✓ Thickness { 8 IWG 5/16" & 3/8" ✓ No. of threads per inch 9 ✓

Pitch of tubes A 3/8" x A 1/2" ✓ Working pressure by Rules 238 lbs **Manhole compensation:** Size of opening in

shell plate 12" x 16" ✓ Section of compensating ring 7 1/2" x 1 3/8" ✓ No. of rivets and diameter of rivet holes 30, 1 3/8" ✓

Outer row rivet pitch at ends 9 1/2" ✓ Depth of flange if manhole flanged — **Steam Dome:** Material None ✓

Tensile strength Thickness of shell Description of longitudinal joint

Diameter of rivet holes Pitch of rivets Percentage of strength of joint { Plate Rivets

Internal diameter Working pressure by Rules Thickness of crown No. and diameter of

stays Inner radius of crown Working pressure by Rules

How connected to shell Size of doubling plate under dome Diameter of rivet holes and pitch

of rivets in outer row in dome connection to shell .

Type of Superheater None. ✓ Manufacturers of { Tubes Steel castings

Number of elements Material of tubes Internal diameter and thickness of tubes

Material of headers Tensile strength Thickness Can the superheater be shut off and

the boiler be worked separately Is a safety valve fitted to every part of the superheater which can be shut off from the boiler

Area of each safety valve Are the safety valves fitted with easing gear Working pressure as per

Rules Pressure to which the safety valves are adjusted Hydraulic test pressure:

tubes , castings and after assembly in place Are drain cocks or valves fitted

to free the superheater from water where necessary .

Have all the requirements of Sections 14 to 23 inclusive for boilers been complied with .

The foregoing is a correct description,
For RICHARDSONS, WESTGARTH & Co. LIMITED
Manufacturer.

Dates of Survey { During progress of work in shops 1927 Oct. 17. 21. 24. 25. 28. 31 Nov. 1. 2. 3. 8. 11. 15. 16. 18. 21. 2. 5. 6. 8. 9. 13. 16. – 1928. Jan. 4. 23. Feb. 27. 30. 31. Are the approved plans of boiler and superheater forwarded herewith (If not state date of approval.) Yes ✓ MANAGING DIRECTOR
{ During erection on board vessel Feb. 23. 6. Total No. of visits 33.

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

Both these boilers have been built under Special Survey.
The materials & workmanship are good.
On completion they satisfactorily withstood the hydraulic test.
All the boiler mountings have been tested to 360 lbs.
They are being despatched to Sunderland for fitting on board.
These boilers have been satisfactorily fitted in the vessel & the safety valves adjusted under steam for notation see machinery report.

Survey Fee £ : : When applied for, 192

Travelling Expenses (if any) £ : : When received, 192

R. D. Shilston A. Daintith.
Engineer Surveyors to Lloyd's Register of Shipping.

Committee's Minute TUES. 27 MAR 1928

Assigned See Sd Gl No 29677